

## Message Text

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ACTION AF-10

INFO OCT-01 ISO-00 SOE-02 AID-05 CEA-01 CIAE-00  
COME-00 DODE-00 EB-08 DOE-15 H-01 INR-10 INT-05  
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FM AMCONSUL JOHANNESBURG

TO SECSTATE WASHDC 7786

INFO AMEMBASSY PRETORIA

AMCONSUL CAPE TOWN

AMCONSUL DURBAN

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CAPE TOWN FOR EMBASSY

E.O. 11652: N/A

TAGS: ENRG, SF

SUBJ: SASOL I AND II: REALITIES; SASOL III: SPECULATION

REF: (A) 77 JOHANNESBURG A-66, (B) 76 JOHANNESBURG 810,  
(C) 76 JOHANNESBURG A-11, (D) 76 JOHANNESBURG A-65  
(E) 77 JOHANNESBURG A-10, (F) JOHANNESBURG A-05

1. SUMMARY: ON MAY 26, JOHANNESBURG'S FINANCIAL GAZETTE  
SURFACED WITH A LEAD ARTICLE ON A TOPIC THAT HAS BEEN CIRCULATING  
IN THE BACK ROOMS FOR A NUMBER OF MONTHS: WILL SOUTH AFRICA  
CONSTRUCT A "SASOL III" COAL-TO-OIL CONVERSION PLANT IN THE  
NEAR FUTURE? THE SUBJECT IS, OF COURSE, PURE SPECULATION AT  
THIS STAGE AND, AS MERELY A RUMOR, MUST BE TREATED AS SUCH.  
MORE IMPORTANTLY AT THE MOMENT, THE RUMOR HAS GIVEN RISE,  
ONCE AGAIN, TO A RANGE OF "STATISTICS" ON SASOL II -- TO  
HIGHLIGHT ITS MASSIVE SIZE AND TO ALLUDE TO A GREATER SASOL  
III IN SOUTH AFRICA'S FUTURE. OUTPUTS FROM SASOL I AND  
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SASOL II (CURRENTLY UNDER CONSTRUCTION) ARE WITHHELD FROM  
THE PUBLIC BY SAG. THE TWODYNAMIC VENTURES HAVE  
LONG BEEN OF SIGNIFICANT PUBLIC INTEREST, HOWEVER, AND  
GUESSWORK BY THE PRESS HAS BEEN DESIGNED TO WORK IN THIS  
DIRECTION. MISLEADING AND/OR EXAGGERATED PRESENTATIONS  
HAVE BEEN THE RESULT. WE HAVE BEEN ASSEMBLING RELIABLE  
DATA ON THE TWO SASOLS OVER AN EXTENDED PERIOD AND HAVE

DISCREETLY DISCUSSED THESE FINDINGS WITH RESPONSIBLE OIL COMPANY REPS AND SAG OFFICIALS, HOPEFULLY, TO SET THE RECORD STRAIGHT FOR OUR OWN NEEDS AND TO PUT TOGETHER A REALISTIC PRESPECTIVE OF WHAT SASOL I IS TODAY; WHAT SASOL I COULD (REPEATD) COULD BECOME IN THE EVENT OF AN EMERGENCY; AND WHAT MAY BE ACTUALLY EXPECTED FROM SASOL II WHEN THIS COMPLEX BECOMES REALITY IN 1981. WE OFFER OUR CURRENT EVALUATIONS BELOW. END SUMMARY.

2. UNDERSTANDABLY, NEITHER THE MANAGEMENT OF THE PUBLIC SECTOR SOUTH AFRICAN COAL, OIL AND GAS CORPORATION (SASOL) NOR OTHER APPROPRIATE SAG OFFICIALS ARE WILLING TO COMMENT ON THE POSSIBILITY OF A THIRD COAL-TO-OIL CONVERSION PLANT (SASOL III) IN LIGHT OF THEIR PRESENT PREOCCUPATION WITH THE ON-GOING CONSTRUCTION OF SASOL II (REF. A.). INDEED, AT A CAPITAL EXPENDITURE OF R2.5 (\$2.9) BILLION, INCLUDING PLANT, TOWNSHIPS AND HOUSING, THE SECUNDA (TRANSVAAL) SASOL II IS PROJECT ENOUGH FOR THIS GOVERNMENT AT THE MOMENT. A SASOL III WOULD REACH A COST LEVEL OF R3.5 BILLION IF UNDERTAKEN IN THE NEAR FUTURE, WITH STILL A GREATER COST ESCALATION A DISTINCT PROBABILITY IF DELAYED FOR SAY, 10 YEARS. I WOULD ENCOUNTER SEVERE PROBLEMS VIS-A-VIS WATER AND COAL AVAILABILITY IN AREAS OTHERWISE SUITABLE FOR A PLANT, AND WOULD ALMOST CERTAINLY BE CHALLENGED BY CONSERVATIONISTS AS "A WASTE" OF THE COUNTRY'S SOLID LIMITED OFFICIAL USE

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FUEL ENERGY RESOURCES (REF. B). EVEN SO, SASOL IS KNOWN TO BE CURRENTLY STUDYING ALL ASPECTS OF A SASOL III. RESEARCH IS CONTINUING IN THE DIRECTION OF MORE SOPHISTICATED EQUIPMENT, IMPROVED PROCESS FLOW LINES, LOCATION AND ECONOMICS. AN EARLY DECISION, HOWEVER.

3. OUTPUTS FROM SASOL I AND SASOL II, AND IMPORTS OF NATURAL CRUDE OIL (AND CONSUMPTION), ARE WITHHELD FROM THE PUBLIC BY SAG. MANY FIGURES PUT FORTH BY THE DAILY PRESS, AND EVEN BY RESPONSIBLE TECHNICAL REPORTERS, THUS BECOME WARPED IN TRANSLATION. STATEMENTS CLAIMING THAT SASOL WILL BE "10 TIMES LARGER THAN SASOL I" AND THAT SASOL II "WILL SUPPLY 30 PERCENT OF SOUTH AFRICA'S LIQUID FUEL REQUIREMENTS" (OR ALTERNATIVELY, THE TWO SASOLS COMBINED WILL MEET 30 PERCENT OF THE COUNTRY'S LIQUID FUEL REQUIREMENTS ANNUALLY) CONSISTENTLY RE APPEAR WHEN ORDERS OF MAGNITUDE ARE DESIRED.

4. OUR STUDIES REVEAL THAT, FROM AN INITIAL OUTPUT OF 2.4 MILLION TONS OF COAL FROM SASOL I'S SIGNMA COLLIERY IN 1955 TO 5.4 MILLION TONS IN 1977, SYNTHETIC CRUDE (SYNCRUDE) OIL PRODUCTION AT SASOL 1 INCREASED FROM 3.7 MILLION

U.S. BARRELS (1955) TO OVER 8.4 MILLION BARRELS ANNUALLY DURING 1977. APPROXIMATELY 52 PERCENT OF THE 1977 PRODUCTION WAS CHanneled INTO THE COMPANY'S NATREF GRASSROOTS POL REFINERY (ADJOINING THE SASOL I GASIFICATION/ LIQUIFACTION PLANT AT SASOLBURG, ORANGE FREE STATE), WHILE THE REMAINDER WAS CONVERTED INTO MORE LUCRATIVE DOWNSTREAM PRODUCTS (METHANE, ETHYLENES AND PLASTICS, PROPYLENE, BUTYLENE, WAXES, ALCOHOLS, ETC.). THE 4.4 MILLION BARRELS OF SYNCRUDE CONSUMED BY THE NATREF REFINERY FOR GASOLINE AND OIL PRODUCTION REQUESTED 25 PERCENT OF THAT REFINERY'S THROUGHPUT (17.5 MILLION BARRELS) AND 4 PERCENT OF ALL CRUDE OIL REFINED IN SOUTH AFRICA DURING 1977 (120.0 MILLION BARRELS). THE COUNTRY WIDE REMAINDER COMPRISED IMPORTED NATURAL CRUDE, LARGELY FROM THE PERSIAN GULF.  
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CAPE TOWN FOR EMBASSY

5. SHOULD DEMANDS CHANGE THROUGH OIL SACTIONS OR OTHER STRATEGIC REASONS OUTWEIGHING ECONOMIC CONSIDERATIONS, SASOL I COULD CONCEIVABLY SHUT DOWN ITS DOWNSTREAM

PRODUCT LINES AND FEED ITS ENTIRE SYNCRUDE OUTPUT TO ITS NATREF REFINERY. THIS WOULD THEN PROVIDE NATREF WITH, SAY, 8.4 MILLION BARRELS OF CRUDE ANNUALLY AT THE 1977 OUTPUT LEVEL, OR 7 PERCENT OF SOUTH AFRICA'S TOTAL REFINERY THROUGHPUT. LOOKING AHEAD, THE SIGMA MINE AND SASOL I REPORTEDLY ARE CAPABLE, ALSO, OF AN EXPANSION OF 10.9 MILLION BARRELS OF SYNCRUDE ANNUALLY BY 1980, OR TO A LEVEL NO GREATER THAN 9 PERCENT OF THE COUNTRY'S CURRENT REFINING CAPACITY. HENCE THE NEED FOR SASOL II.

6. SASOL II WILL NOT FOCUS ON THE DOWNSTREAM PRODUCT CAPABILITY ENJOYED BY SASOL I, THOUGH ITS PRODUCTS WILL INCLUDE LIMITED (AND INDEED INESCAPABLE) VOLUMES OF ETHYLENE, CHEMICALS, TAR, AMMONIA AND SULFUR ANNUALLY. UNLIKE SASOL I, ITS "MAIN LINE" WILL BE THE FUELS -- AND IT IS LIMITED OFFICIAL USE

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WITHIN THIS SPHERE THAT SO MANY EXAGGERATIONS AND HALF-TRUTHS HAVE MERGED SINCE CONSTRUCTION OF SASOL II WAS ANNOUNCED IN DECEMBER 1974.

7. THE SECUNDA, TRANSVAAL, PLANT (ABOUT 90 MILES SOUTHEAST OF JOHANNESBURG) WILL OBTAIN ITS COAL FROM THE COMPANY-OWNED AND OPERATED BOSJESSPRUIT MINE. ACCORDING TO SOUTH AFRICA'S TECHNICAL JOURNAL, "COAL, GOLD AND BASE MINERALS OF SOUTHERN AFRICA" (DECEMBER 1977), THE MINE WILL HAVE A RATED OUTPUT OF 12.0 MILLION METRIC TONS OF COAL ANNUALLY FROM TWO SHAFTS; GEARED COMPLETELY AND PRECISELY TO SASOL II REQUIREMENTS. EARLIER, IN AN ADDRESS TO THE AUSTRALIAN GAS ASSOCIATION, SASOL MANAGING DIRECTOR, D.P. DEVILLIERS, STATED THAT THE PRODUCTS (CITED ABOVE) TO BE REALIZED FROM SASOL II WOULD TOTAL 2.1 MILLION TONS PER YEAR. GIVEN THESE BASIC 'TOTALS', WE ARE THEREFORE ABLE TO ARRIVE AT THE FOLLOWING INTERPRETATIONS.

8. TO ACHIEVE A 'REAL' OUTPUT OF 2.1 MILLION TONS ANNUALLY, SASOL II MUST BE, AND HAS BEEN, DESIGNED TO PRODUCE 2.5 MILLION TONS OF SYNCRUDE, OR 18.7 MILLION BARRELS OF CRUDE OIL PER YEAR (AT 7.47 BARRELS/METRIC TON). INDICATIONS ARE THAT SASOL II'S CONVERSION UNITS WILL PRODUCE 1.56 BARRELS OF SYNCRUDE FOR EACH TON OF COAL PROCESSED AND, AT THIS YIELD, THE FIRM'S BOSJESSPRUIT MINE WILL MEET SASOL II'S REQUIREMENTS EXACTLY (OIL CONTENT OF 12.0 MILLION TONS OF COAL AT THIS YIELD EQUALS 18.7 MILLION BARRELS OF SYNTHETIC CRUDE). THUS, AT EITHER SOUTH AFRICA'S 1977/78 CRUDE THROUGHPUT (120.0 MILLION BARRELS) OR THE INDUSTRY'S TOTAL REFINERY CAPACITY (124.3 MILLION BARRELS)(REF. C), PLUS SASOL II'S PROJECTED CAPACITY (18.7 MILLION BARRELS), SASOL II

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MAY BE EXPECTED TO CONTRIBUTE BETWEEN 13.1 -13.5 PERCENT TO THE COUNTRY'S LIQUID FUEL FUEL REQUIREMENTS. WITH SASOL K'S 4-9 PERCENT CONTRIBUTION ADDED (PARAS. 4 & 5), THE TWO UNITS COMBINED MAY THEREFORE REPRESENT A GRAND TOTAL OF 17-22 PERCENT OF THE COUNTRY'S NORMAL REQUIREMENTS.

9. THE ABOVE-MENTIONED PARAMETERS NOTWITHSTANDING, SEPARATE ARGUMENTS HAVE BEEN PUT FORTH THAT THE COAL-TO-OIL "YIELD" USED (1.56 BBL/TON OF COAL) IS LOWER THAN THAT WHICH WILL BE REALIZED -- THAT SASOL II, WITH ITS IMPROVED TECHNOLOGY, WILL ACTUALLY PRODUCE APPROXIMATELY 2.5 BARRELS OF OIL PER TON OF COAL PROCESSED (AN OUTPUT ENVISAGED ALSO IN THE U.S.). IF SO, THE RECOVERABLE OIL CONTENT OF BOSJESSPRUIT MINE PRODUCTION WOULD BE ABOUT 30.0 MILLION BARRELS ANNUALLY AND DE VILLIERS' STATED PRODUCT QUANTITY (PARA. 7)(2.1 MILLION TONS, OR 15.7 MILLION BARRELS) WOULD BE NEARLY DOUBLED. THIS WOULD THEN HAVE TO ASSUME THAT SASOL II'S IN-LINE GASIFICATION/LIQUIFICATION EQUIPMENT COULD IN FACT PROCESS TWICE THE VOLUME REPORTEDLY CURRENTLY DESIGNED INTO THE UNIT. GIVEN THIS CAPABILITY, INCIDENTALLY, THE COMBINED OUTPUT OF SASOL I AND SASOL II WOULD APPROACH THE DESIRABLE 30 PERCENT CONTRIBUTION FREQUENTLY CITED IN THE PRESS. YET, OTHER REPORTED (AND VERIFIED) FACTORS INTERFERE. A 2.5:1 YIELD FOR SASOL II APPEARS TO INVOLVE A MAJOR MECHANICAL IMBALANCE AS THE PLANT IS CURRENTLY DESIGNED; AN IMBALANCE THAT NEITHER THE UNIT'S PRIME CONTRACTOR, FLUOR CORPORATION (REF. A), NOR SASOL ENGINEERS COULD UNDERAPPRAISE. WE ANTICIPATE FAVORABLE CONCLUSIONS TO SEVERAL RESEARCH PROGRAMS KNOWN TO BE IN PROGRESS, BUT THEY MUST YET PROVE SUCCESSFUL BEFORE IN-PLANT MODIFICATIONS CAN BE MADE AND BEFORE MAJOR ADDITIONS TO INITIALLY-INSTALLED EQUIPMENT MAY BE UNDERTAKEN. WE SUBMIT, THEREFORE, THAT IF THE GREATER OUTPUT IS TO BE OBTAINED AT SASOL II IT WILL FOLLOW THE PLANT'S EARLY PHASES OF OPERATION BY SOME YEARS.

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10. WE SEE THE TWO SASOLS AS USEFUL ADDITIVES TO SOUTH AFRICA'S FUTURE IN OIL; JUST AS UNDERGROUND STORAGE OF NATURAL CRUDE OIL SERVES ITS PURPOSE (REF. C). FOR ITS PART, COAL-TO-OIL CONVERSION IS INCREDIBLY COSTLY TO INSTALL, YIELDS ARE RESTRICTED AT BEST, AND THE TECHNOLOGY REMAINS IN ITS INFANCY. TO THE EXTENT THAT THIS GOVERNMENT

CAN AFFORD SUCH EXPENDITURES (OVER EXTENDED TIME FRAMES)  
THE CONCEPT NEVERTHELESS IS IMPORTANT. THE NET RESULT IS  
NOT, AND WILL NOT BE A PANACEA IN OIL, HOWEVER. IT IS  
A MEANS OF ENERGY DIVERSIFICATION TO A DEGREE AND A  
POLITICO/STRATEGIC CONSIDERATION IN LARGE MEASURE.  
JONSON

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## Message Attributes

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